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11 February 2003

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PO 1/7700 0.00-0200717.7

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

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1. Your reference	Jg-2809	0200717.7	
2. Patent application number (The Patent Office will fill in this part)	14 JAN 2002		
3. Full name, address and postcode of the or of each applicant (<u>underline all surnames</u>)	Ecological Power International (Holdings) Limited Trowle Barn, Wingfield, Trowbridge, Wiltshire, BA14 9LE United Kingdom		
Patents ADP number (if you know it)	797684801		
If the applicant is a corporate body, give the country/state of its incorporation	United Kingdom		
4. Title of the invention			
APPARATUS FOR THE PYROLYSIS OF WASTE MATERIAL			
5. Name of your agent (if you have one)	Graham Jones & Company		
"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)	77 Beaconsfield Road, Blackheath, London SE3 7LG		
Patents ADP number (if you know it)	2097001		
6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number	Country	Priority application number (if you know it)	Date of filing (day / month / year)
7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application		Date of filing (day / month / year)
8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:	YES		
a) any applicant named in part 3 is not an inventor, or			
b) there is an inventor who is not named as an applicant, or			
c) any named applicant is a corporate body.			
See note (d))			

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Continuation sheets of this form

Description 6

Claim(s)

Abstract

Drawing(s) 2 + 12 

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*) 2

Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents
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11.

I/We request the grant of a patent on the basis of this application.

Signature 

Date 14/01/02

12. Name and daytime telephone number of person to contact in the United Kingdom

Mr. G.H. Jones 020 8858 4039

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APPARATUS FOR THE PYROLYSIS OF WASTE MATERIAL

This invention relates to apparatus for the pyrolysis of waste material. The waste material may be domestic, industrial or natural waste material, or combinations of such material.

Apparatus for the pyrolysis of waste material is well known. This known apparatus tends to be expensive to produce, construct, maintain and operate. One particular area in which the known apparatus is expensive as aforesaid is with regard to moving the waste material through a pyrolysis chamber in the apparatus. It is an aim of the present invention to reduce this problem.

Accordingly in one non-limiting embodiment of the present invention there is provided apparatus for the pyrolysis of waste material, which apparatus comprises a pyrolysis chamber, an inlet at a first end of the pyrolysis chamber, an outlet at a second end of the pyrolysis chamber, and feed means for feeding waste material through the pyrolysis chamber, the feed means comprising a cranked member, at least one elongate member which extends along the pyrolysis chamber between the inlet and the outlet and which has a first end adjacent the inlet and a second end adjacent the outlet, a feed formation connected to the first end of the elongate member, and connector means which connects the second end of the elongate member to the cranked member, and the feed means being such that

rotation of the cranked member causes the elongate member to move backwards and forwards and the feed formation to move the waste material from the inlet towards the outlet.

The feed means utilised in the pyrolysis chamber is able to be inexpensively produced, constructed, maintained and operated. This thus helps to reduce these particular costs in the overall apparatus for the pyrolysis of the waste material.

The apparatus may include mounting means for hang mounting the first end of the elongate member in order to facilitate the movement backwards and forwards of the elongate member and the movement of the waste material by the feed formation.

The mounting means may be a hanging bar or a hanging spring. Other types of mounting means may be employed.

Preferably, the feed formation is a rake head. Other types of feed formation may however be employed.

Usually, the apparatus will be one in which there are at least two of the elongate members, and at least two of the feed formations, there being one of the feed formations for each one of the elongate members. More preferably, there are three of the elongate members, and three of the feed formations.

The apparatus may include drive means for driving the cranked member.

The drive means will usually include a motor. The drive means may include a chain and sprocket arrangement.

The pyrolysis chamber may be an outer chamber which is made of a metal and which has a heat insulating lining. The metal will usually be steel but other metals may be employed.

The apparatus may be one in which a floor part of the pyrolysis chamber is formed by a floor of the outer shell and the heat insulating lining on the floor of the outer shell. The heat insulating lining on the floor of the pyrolysis chamber is preferably formed of fire bricks.

Preferably, the pyrolysis chamber is constructed as a large long horizontally-extending chamber. Other shapes for the pyrolysis chamber may however be employed.

An embodiment of the invention will now be described solely by way of example and with reference to the accompanying drawings in which;

Figure 1 shows apparatus for the pyrolysis of waste material, the apparatus having a pyrolysis chamber and feed means;

Figure 2 is a view similar to Figure 1 but shows the inside of the pyrolysis chamber and the feed means from an end of the pyrolysis chamber opposite to that shown in Figure 1; and

Figure 3 shows part of drive means for driving a cranked member forming part of the feed means shown in Figures 1 and 2.

Referring to the drawings, there is shown apparatus 2 for the pyrolysis of waste material. The waste material may be domestic, industrial

or natural waste material, or combinations of such material. The apparatus 2 comprises a pyrolysis chamber 4, an inlet 6 at a first end 8 of the pyrolysis chamber 4, and an outlet 10 at a second end 12 of the pyrolysis chamber 4. The apparatus 2 also comprises feed means 14 for feeding the waste material through the pyrolysis chamber 4.

The feed means 14 comprises a cranked member 16 and three elongate members 18 which extend along the pyrolysis chamber 4 between the inlet 6 and outlet 10. Each elongate member 18 has a first end 20 adjacent the inlet 6, and a second end 22 adjacent the outlet 10.

A feed formation (not shown) is connected to the first end 20 of each one of the elongate members 18. Connector means 24 connect the second end 22 of each one of the elongate members 18 to the cranked member 16. The connector means 24 are each U-bolts 25 and a bearing sleeve 27. The feed means 14 is such that rotation of the cranked member 16 causes the elongate members 18 to move backwards and forwards, and the feed formation to move the waste material from the inlet 6 to the outlet 10.

As shown in Figure 2, the apparatus 2 includes mounting means 26 for hang mounting the first end 20 of each one of the elongate members 18 in order to facilitate the movement backwards and forwards of the elongate members 18, and thus the movement of the waste material by the feed formation from the inlet 6 to the outlet 10. As shown in Figure 2, the mounting means 26 is in the form of a plurality of hanging bars which hang from a transverse frame member 28.

The apparatus 2 includes drive means 30 for driving the cranked member 16. The drive means 30 includes a motor 31 as shown in Figure 3. The drive means 30 also includes a chain and sprocket arrangement 32. The chain and sprocket arrangement 32 comprises two shafts 34. Each shaft 34 is mounted in bearing support members 36 which are secured by bolts 38 to a frame part 40. The chain and sprocket arrangement 32 also comprises two chains 42 which pass over sprockets 44 mounted on the shafts 34 as shown.

The pyrolysis chamber 4 is a steel outer shell which has a heat insulating lining. A floor part of the pyrolysis chamber 4 is formed by the outer shell and the heat insulating lining on the floor of the outer shell. The heat insulating line on the floor of the pyrolysis chamber may be formed of fire bricks or any other suitable and appropriate material. The pyrolysis chamber 4 is constructed as a large long horizontally-extending chamber.

As can be appreciated from the drawings, the feed means 14 is simple to produce, construct, maintain and operate. This helps to keep the overall cost of the apparatus 2 down. This in turn helps to make the apparatus 2 commercially viable as compared to many known types of pyrolysis apparatus which are just not commercially viable in terms of production, construction, maintenance and operation costs.

It is to be appreciated that the embodiment of the invention described above with reference to the accompanying drawings has been given by way of example only and that modifications may be effected. Thus, for example,

the feed formation is preferably in the form of a rake head. The rake head can be formed by mounting a tube transversely across the first ends 20 of the elongate members 18. This transverse tube then has rods welded underneath it and extending downwardly in order to form the rake head. Other designs may however be employed. Also, although the drawings show the mounting means 26 in the form of hanging bars, they may alternatively be hanging springs or other devices as may be required.

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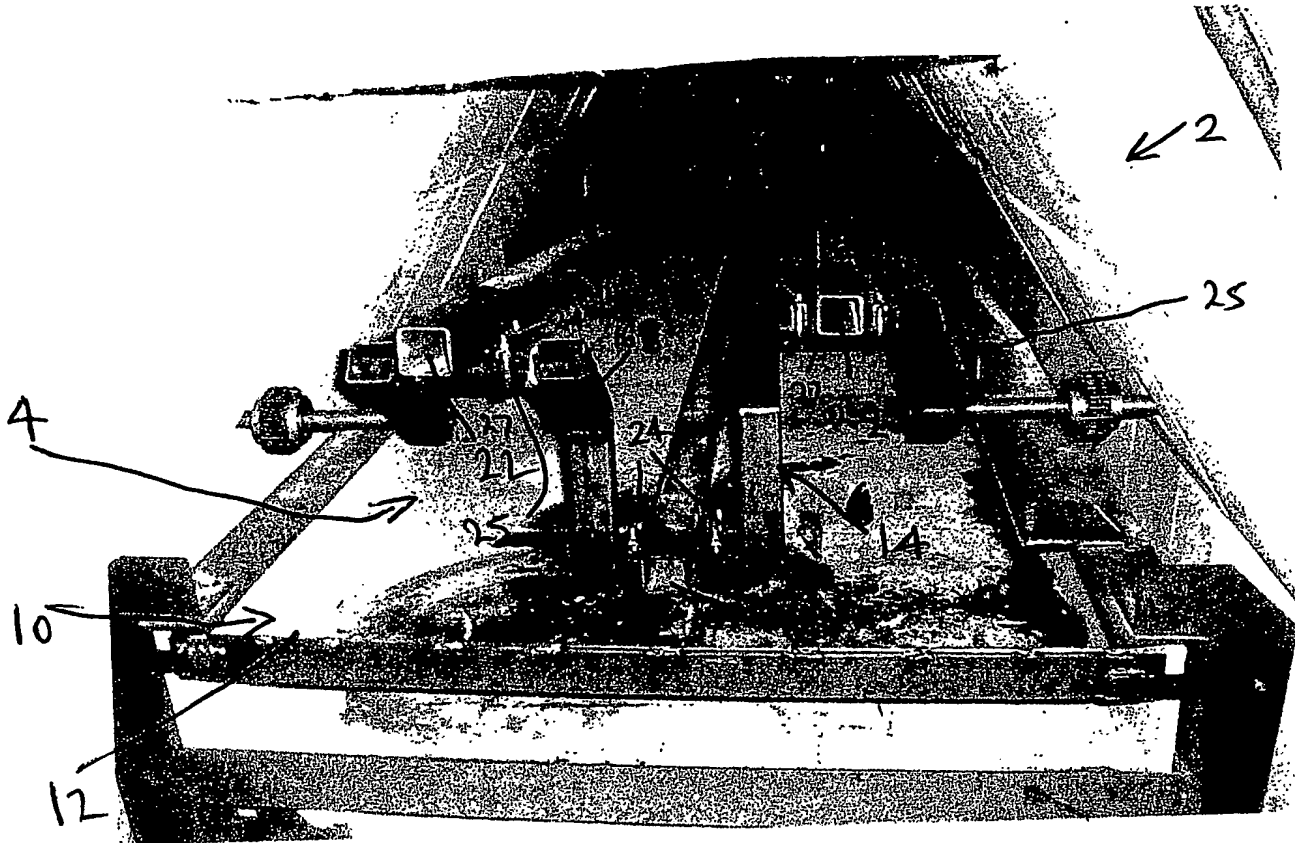


FIG 1
VIEW OF INTERMEDIATE FEED SHOWING
CRANIC (FRONT END)

2/2

31

EXTERNAL DRIVE
TO FREE

✓ 2
C. 2.11

—42

-42

136

38

32

-3b

538

30

FIG 3

28

4

4

6

8

FIG 2

VIEW OF Real EN) of FCB) (INTERNAL)

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